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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,073	03/11/2004	Douglas M. Baney	10021233-1	8089

7590 11/27/2007

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EXAMINER	
PHAN, HANH	

ART UNIT	PAPER NUMBER
2613	

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11/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/800,073	BANEY ET AL.	
	Examiner	Art Unit	
	Hanh Phan	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5-12,22-24 and 26-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3, 5-12, 22-24 and 26-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 09/13/2007.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 5-10, 12, 22-24, and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olshansky et al (US Patent No. 5,134,509) in view of Taylor (Pub. No.: US 2004/0114939 A1).

Regarding claims 1, 5, 6, 22, 26 and 27, referring to Figure 4, Olshansky et al teaches a system for superheterodyne detection comprising:

a first conversion unit (i.e., fiber coupler 28, LO laser 52 and photodetector 30 and amplifier 32, Fig. 4) for performing a first heterodyne operation on an optical input signal to generate an electrical IF signal, the first conversion unit comprises: a local oscillator (i.e., LO laser 52, Fig. 4) for generating a swept optical local oscillator signal, a coupler (i.e., fiber coupler 28, Fig. 4) for coupling the optical input signal and the swept local oscillator signal, and a photodetector (i.e., photodetector 30, Fig. 4, col. 8, lines 14-54); and

a second conversion unit (i.e., mixer 54 and electrical local oscillator VCO 56, Fig. 4) electrically coupled to the first conversion unit for performing a second heterodyne operation to generate an electrical output signal, the second conversion unit comprises: an electrical local oscillator (i.e., electrical local oscillator VCO 56, Fig. 4) for generating a fixed electrical local oscillator signal, and a mixer (i.e., mixer 54, Fig. 4) coupled to the electrical local oscillator for performing a second heterodyne operation when mixing said electrical IF signal and said fixed electrical local oscillator signal to generate an electrical output signal suitable for signal processing (i.e., col. 8, lines 14-54).

Olshansky et al differs from claims 1, 5, 6, 21, 22, 26 and 27 in that he fails to specifically teach a signal processor for signal processing. Taylor, from the same field of endeavor likewise teaches a system for superheterodyne detection (Figures 6 and 3A). Taylor further teaches a signal processor for signal processing (i.e., Figs. 6 and 3A, page 10, paragraphs [0107]-[0111]). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the signal processor for signal processing as taught by Taylor in the system of Olshansky et al. One of ordinary skill in the art would have been motivated to do this since allowing correcting the transmission impairments.

Regarding claims 3 and 24, Olshansky further teaches the first conversion unit comprises: an IF amplifier (i.e., amplifier 32, Fig. 1) and an IF filter (i.e., filter 34, Fig. 1).

Regarding claim 23, the combination of Olshansky and Taylor teaches the second conversion unit comprises: an electrical local oscillator for generating a fixed

electrical local oscillator signal; and a mixer coupled to the electrical local oscillator for performing a second heterodyne operation when mixing said electrical IF signal and said fixed electrical local oscillator signal to generate an electrical output signal suitable for signal processing (i.e., Fig. 4 of Olshansky et al and Fig. 6 of Taylor).

Regarding claims 7 and 30, the combination of Olshansky and Taylor teaches the first conversion unit reduces the effect of intensity noise (i.e., Figs. 1 and 4 of Olshansky et al and Fig. 6 of Taylor).

Regarding claim 8, the combination of Olshansky and Taylor teaches the first conversion unit separates an image in the electrical IF signal to improve amplitude accuracy of the optical input signal (i.e., Fig. 4 of Olshansky et al and Fig. 6 of Taylor).

Regarding claims 9 and 28, the combination of Olshansky and Taylor teaches the first conversion unit produces a non-zero electrical IF signal (i.e., Fig. 4 of Olshansky et al and Fig. 6 of Taylor).

Regarding claims 10 and 29, the combination of Olshansky and Taylor teaches the second conversion unit comprises a microwave image rejection mixer (i.e., Fig. 4 of Olshansky et al and Fig. 6 of Taylor).

Regarding claim 12, Olshansky et al further teaches the second conversion unit downconverts the electrical IF signal to the electrical output signal (i.e., Fig. 4 of Olshansky et al).

Regarding claim 31, referring to Figure 4, Olshansky et al teaches a system for superheterodyne detection comprising:

a first conversion unit (i.e., fiber coupler 28, LO laser 52 and photodetector 30 and amplifier 32, Fig. 4) for performing a first heterodyne operation on an optical input signal to generate an electrical IF signal (i.e., col. 8, lines 14-54); and

a second conversion unit (i.e., mixer 54 and electrical local oscillator VCO 56, Fig. 4) electrically coupled to the first conversion unit for performing a second heterodyne operation to generate an electrical output signal (i.e., col. 8, lines 14-54).

Olshansky et al differs from claim 31 in that fails to teach a signal processor for signal processing and a balanced detection unit for canceling intensity noise . Taylor, from the same field of endeavor likewise teaches a system for superheterodyne detection (Figure 6). Taylor further teaches a signal processor for signal processing and a balanced detection unit for canceling intensity noise (i.e., Figs. 6 and 3A, page 10, paragraphs [0107]-[0111]). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the signal processor for signal processing and balanced detection unit for canceling intensity noise as taught by Taylor in the system of Olshansky et al. One of ordinary skill in the art would have been motivated to do this since allowing correcting the transmission impairments and reducing the noise signal.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olshansky et al (US Patent No. 5,134,509) in view of Taylor (Pub. No.: US 2004/0114939 A1) and further in view of Graves et al (US Patent No. 3,975,628).

Regarding claim 11, Olshansky et al as modified by Taylor teaches all the aspects of the claimed invention excepts fails to specifically teach the second conversion unit comprises a band pass filter coupled to the first conversion unit, wherein the band pass filter is offset from an electrical local oscillator in the second conversion unit to further reduce an image. Graves et al, from the same field of endeavor likewise teaches optical heterodyne receiver (Figure 4). Graves et al further teaches the second conversion unit comprises a band pass filter coupled to the first conversion unit, wherein the band pass filter is offset from an electrical local oscillator in the second conversion unit to further reduce an image (i.e., Fig. 4, col. 6, lines 14-54). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the second conversion unit comprises a band pass filter coupled to the first conversion unit, wherein the band pass filter is offset from an electrical local oscillator in the second conversion unit to further reduce an image as taught by Graves et al in the system of Olshansky et al modified by Taylor. One of ordinary skill in the art would have been motivated to do this since allowing selecting the wanted signal and eliminating the unwanted signal and increasing the signal to noise ratio.

5. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olshansky et al (US Patent No. 5,134,509) in view of Taylor (Pub. No.: US 2004/0114939 A1) and further in view of Tsushima et al (US Patent No. 5,305,134).

Regarding claim 25, Olshansky et al as modified by Taylor teaches all the aspects of the claimed invention excepts fails to specifically teach an optical filter placed

in front of the first conversion unit. Tsushima et al, from the same field of endeavor likewise teaches optical heterodyne receiver (Figure 1). Tsushima et al further teaches an optical filter (i.e., optical filter 6, Fig. 1) placed in front of the first conversion unit (i.e., Fig. 1, col. 3, lines 46-67 and col. 4, lines 1-42). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical filter placed in front of the first conversion unit as taught by Tsushima et al in the system of Olshansky et al modified by Taylor. One of ordinary skill in the art would have been motivated to do this since allowing selecting the wanted signal and eliminating the unwanted signal and increasing the signal to noise ratio.

Response to Arguments

6. Applicant's arguments filed 09/13/2007 have been fully considered but they are not persuasive.

The applicant's arguments to claims 1, 3, 5-12, 22-24 and 26-31 are not persuasive. The independent claims 1, 22 and 31 are now amended to include the limitation of "a system for superheterodyne detection comprising: a first conversion unit for performing a first heterodyne operation on an optical input signal to generate an electrical IF signal, the first conversion unit comprises: a local oscillator for generating a swept optical local oscillator signal, a coupler for coupling the optical input signal and the swept local oscillator signal, and a photodetector; and a second conversion unit electrically coupled to the first conversion unit for performing a second heterodyne operation to generate an electrical output signal, the second conversion unit comprises:

an electrical local oscillator for generating a fixed electrical local oscillator signal, and a mixer coupled to the electrical local oscillator for performing a second heterodyne operation when mixing said electrical IF signal and said fixed electrical local oscillator signal to generate an electrical output signal suitable for signal processing" and the applicant argues that the cited references (Olshansky and Taylor) fail to teach such limitation. The examiner respectfully disagrees. As indicated in Figure 4, Olshansky teaches a system for superheterodyne detection comprising: a first conversion unit comprises a fiber coupler 28, LO laser 52 and photodetector 30 and amplifier 32 for performing a first heterodyne operation on an optical input signal to generate an electrical IF signal, the first conversion unit comprises: a local oscillator 52 for generating a swept optical local oscillator signal, a coupler 28 for coupling the optical input signal and the swept local oscillator signal, and a photodetector 30; and a second conversion unit comprises a mixer 54 and electrical local oscillator VCO 56 electrically coupled to the first conversion unit for performing a second heterodyne operation to generate an electrical output signal, the second conversion unit comprises: an electrical local oscillator VCO 56 for generating a fixed electrical local oscillator signal, and a mixer 54 coupled to the electrical local oscillator for performing a second heterodyne operation when mixing said electrical IF signal and said fixed electrical local oscillator signal to generate an electrical output signal suitable for signal processing (col. 8, lines 14-54). As indicated in Figure 6, Taylor teaches a system for superheterodyne detection comprises a first conversion unit comprises a fiber coupler , an optical local oscillator 206, photodetector and amplifier for performing a first heterodyne operation on an

optical input signal to generate an electrical signal, and a second conversion unit comprises a mixer 204 and electrical local oscillator 202 electrically coupled to the first conversion unit for performing a second heterodyne operation to generate an electrical output signal. Taylor further teaches a signal processor for signal processing 36 in Fig. 3A (page 10, paragraphs [0107]-[0111]).

Therefore, it is believed that the limitations of claims 1, 3, 5-12, 22-24 and 26-31 are still met by the combination of Olshansky, Taylor, Graves and Tsushima and the rejection is still maintained.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

HANH PHAN
PRIMARY EXAMINER